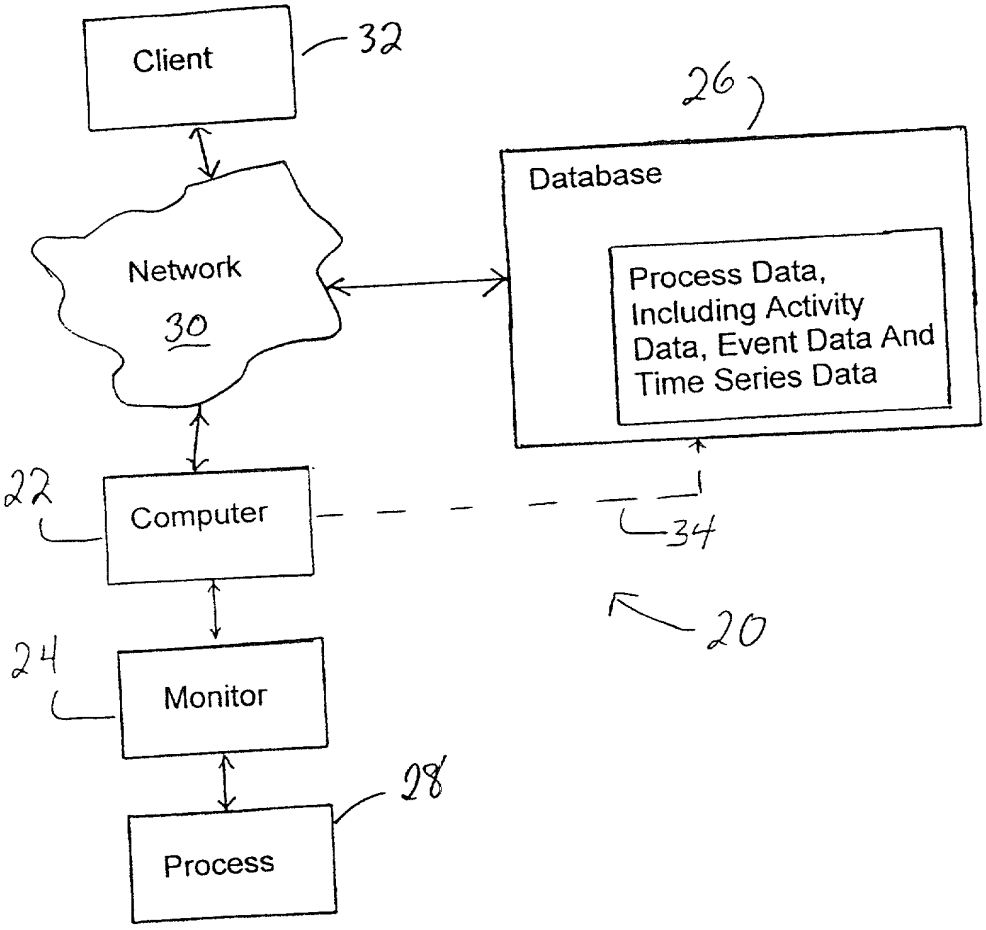

Client
32
26
Database
Network
30
Process Data, Including Activity Data, Event Data And Time Series Data
22
Computer
34
20
24
Monitor
28
Process

Fig. 1

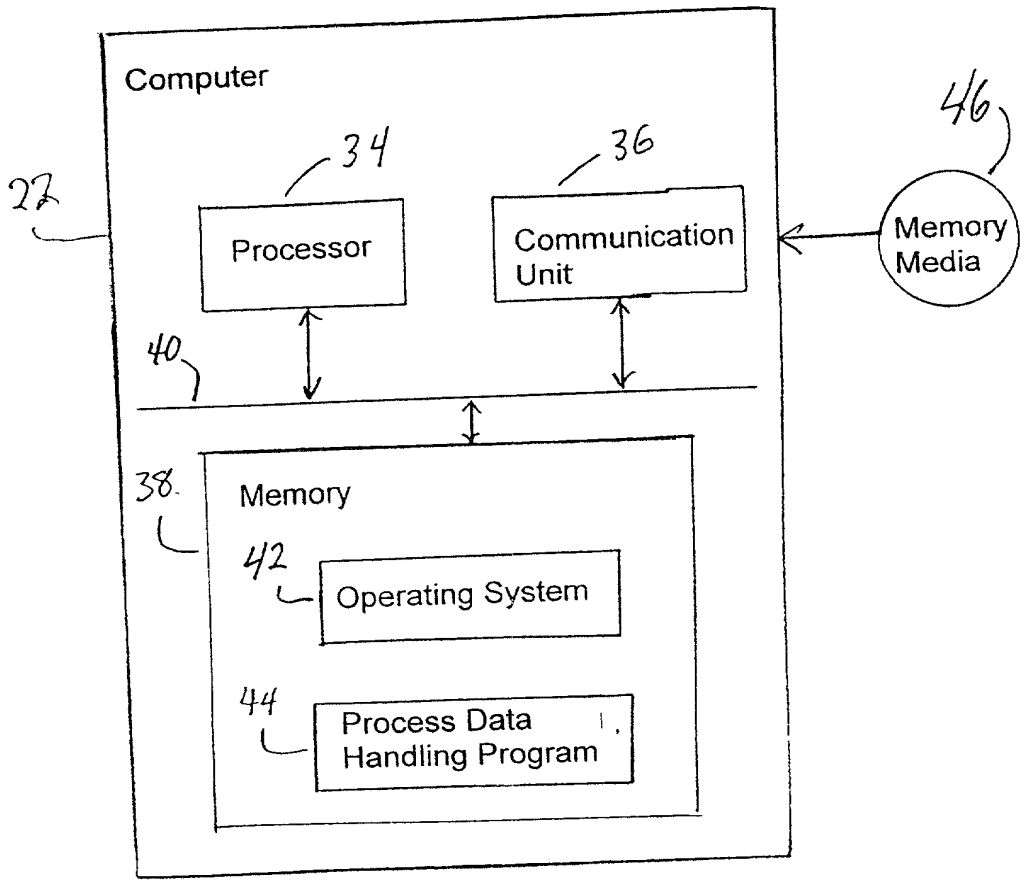

Computer
34
36
46
27
Processor
Communication Unit
Memory Media
40
38
Memory
42
Operating System
44
Process Data Handling Program

Fig. 2

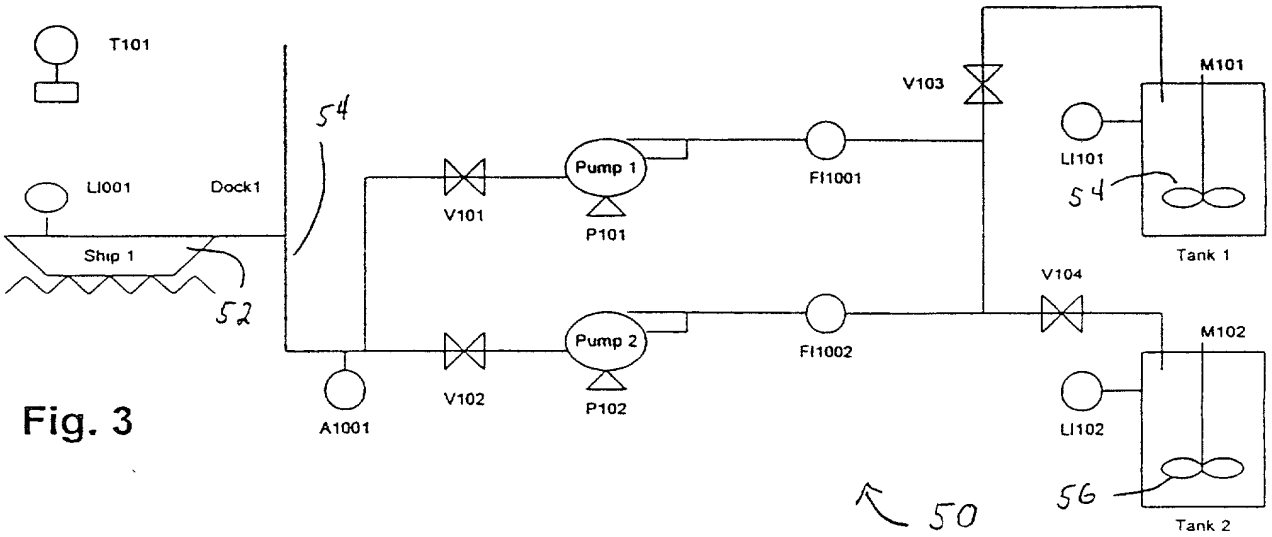


Fig. 3

Fig. 4

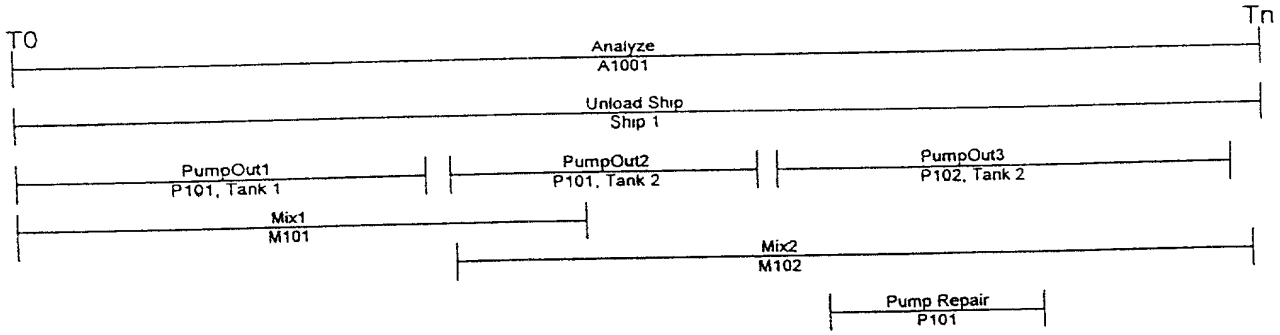
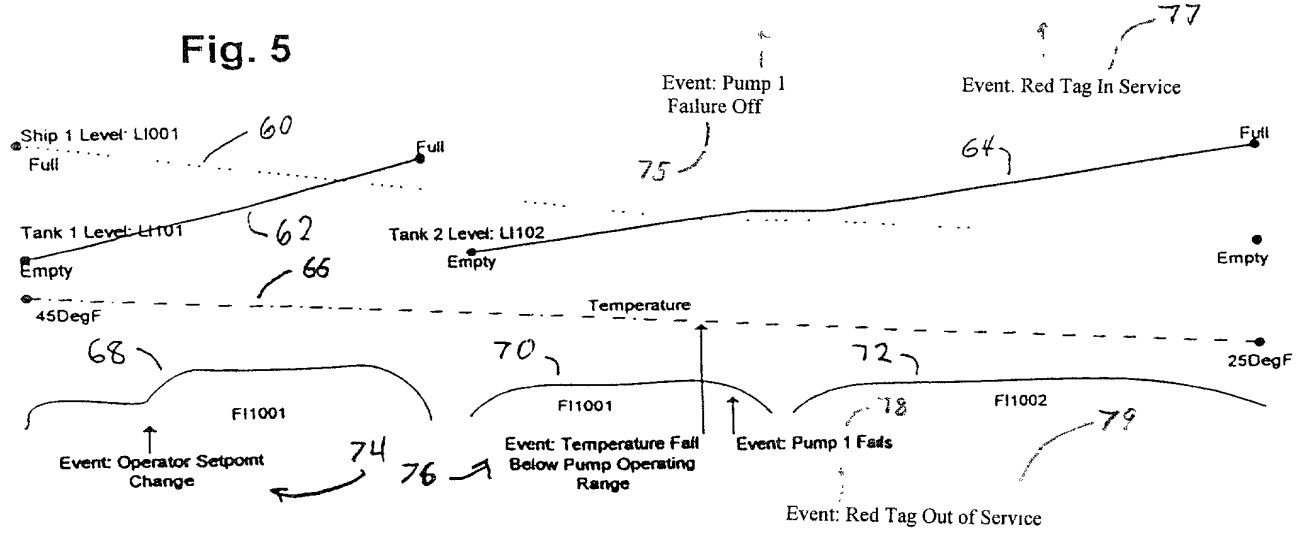


Fig. 5



80 ↘

Activity Type	Attribute Name	Static	Default Value
82 → UnitOperation	StartTime	N	
	EndTime	N	
	ID	N	
	Equipment	N	
	FlowRate	N	
	AccumValue	N	
	Source	Y	ProdSystem

Event Type	Attribute Name	Static	Default Value
84 → Alarm	TimeStamp	N	
	Resource	N	
	Message	N	
	State	N	
	Source	Y	OprSystem
OprChg	TimeStamp	N	
	Operator	N	
	Resource	N	
	Message	N	
	Command	N	
	Source	N	

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Fig. 6

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History

Activity Type	Start Time	End Time	ID	Equipment	FlowRate	AccumValue	Source
PumpOut	8/17/2000 10:00AM	8/17/2000 10:55AM	PumpOut1	Tank1	FI1001.PV	150,000	ProdSystem
PumpOut	8/17/2000 11:05AM	8/17/2000 11:45AM	PumpOut2	Tank2	FI1001.PV	65,000	ProdSystem
PumpOut	8/17/2000 12:05PM	8/17/2000 2:05PM	PumpOut3	Tank2	FI1002.PV	85,000	ProdSystem

Event Type	Time Stamp	Resource	Message	State	Source
Alarm	8/17/2000 11.35AM	T101	LowTemp	On	OprSystem
Alarm	8/17/2000 11:40AM	P101	PumpFail	On	OprSystem
Alarm	8/17/2000 11:45AM	P101	PumpFail	Off	OprSystem

Event Type	Time Stamp	Operator	Resource	Message	Command	Source
OprChg	8/17/2000 10:20AM	JOE	P101	Speed	50	OprSystem

Event Type	Time Stamp	Operator	Device	Message	Command	Source
OprChg	8/17/2000 12.35PM	FRED	PMP101	RedTag	OutOfService	MaintSystem
OprChg	8/17/2000 1.35PM	FRED	PMP101	RedTag	InService	MaintSystem

Fig. 7

Instance

PumpOut Activities

Start Time	End Time	ID	Equipment	FlowRate	AccumValue	Source
8/17/2000 10:00AM	8/17/2000 10:55AM	PumpOut1	Tank1	FI1001.PV	150,000	ProdSystem
8/17/2000 11:05AM	8/17/2000 11:45AM	PumpOut2	Tank2	FI1001.PV	65,000	ProdSystem
8/17/2000 12:05PM	8/17/2000 2:05PM	PumpOut3	Tank2	FI1002.PV	85,000	ProdSystem

88

Alarm Events

90

92

Time Stamp	Resource	Message	State	Source
8/17/2000 11.35AM	T101	LowTemp	On	OprSystem
8/17/2000 11:40AM	P101	PumpFail	On	OprSystem
8/17/2000 11:45AM	P101	PumpFail	Off	OprSystem

OprChg Events

Time Stamp	Operator	Resource	Message	Command	Source
8/17/2000 10:20AM	JOE	P101	Speed	50	OprSystem
8/17/2000 12.35PM	FRED	PMP101	RedTag	OutOfService	MaintSystem
8/17/2000 1 35PM	FRED	PMP101	RedTag	InService	MaintSystem

Fig. 8

Retreival

Rows

Event Type	Time Stamp	Attribute Name	Attribute Value
Alarm	8/17/2000 11.35AM	Resource	T101
		Message	LowTemp
		State	On
		Source	OprSystem
Alarm	8/17/2000 11.40AM	Resource	P101
		Message	PumpFail
		State	On
		Source	OprSystem
Alarm	8/17/2000 11.45AM	Resource	P101
		Message	PumpFail
		State	Off
		Source	OprSystem
OprChg	8/17/2000 10:20AM	Operator	JOE
		Resource	P101
		Message	Speed
		Command	50
		Source	OprSystem
OprChg	8/17/2000 12.35PM	Operator	FRED
		Resource	PMP101
		Message	RedTag
		Command	OutOfService
		Source	MaintSystem
OprChg	8/17/2000 1:35PM	Operator	FRED
		Resource	PMP101
		Message	RedTag
		Command	InService
		Source	MaintSystem

Fig. 9

Columns

Event Type	Time Stamp	Operator	Resource	Message	Command	State	Source
Alarm	8/17/2000 11.35AM		T101	LowTemp		On	OprSystem
Alarm	8/17/2000 11.40AM		P101	PumpFail		On	OprSystem
Alarm	8/17/2000 11.45AM		P101	PumpFail		Off	OprSystem
OprChg	8/17/2000 10.20AM	JOE	P101	Speed	50		OprSystem
OprChg	8/17/2000 12.35PM	FRED	PMP101	RedTag	OutOfService		MaintSystem
OprChg	8/17/2000 1:35PM	FRED	PMP101	RedTag	InService		MaintSystem

Fig. 10

Chart

Activity Type	End Time	ID	AccumValue
PumpOut	8/17/2000 10:55AM	PumpOut1	150,000
PumpOut	8/17/2000 11:45AM	PumpOut2	65,000
PumpOut	8/17/2000 2:05PM	PumpOut3	85,000

Fig. 11

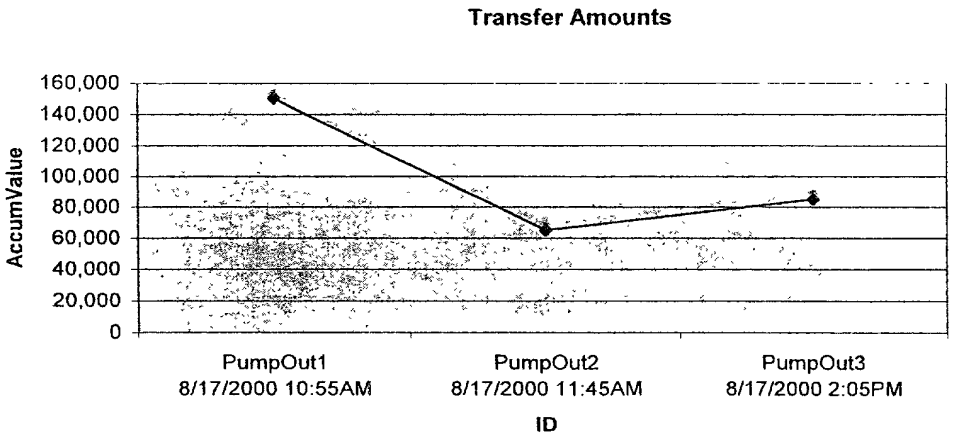

Fig. 12

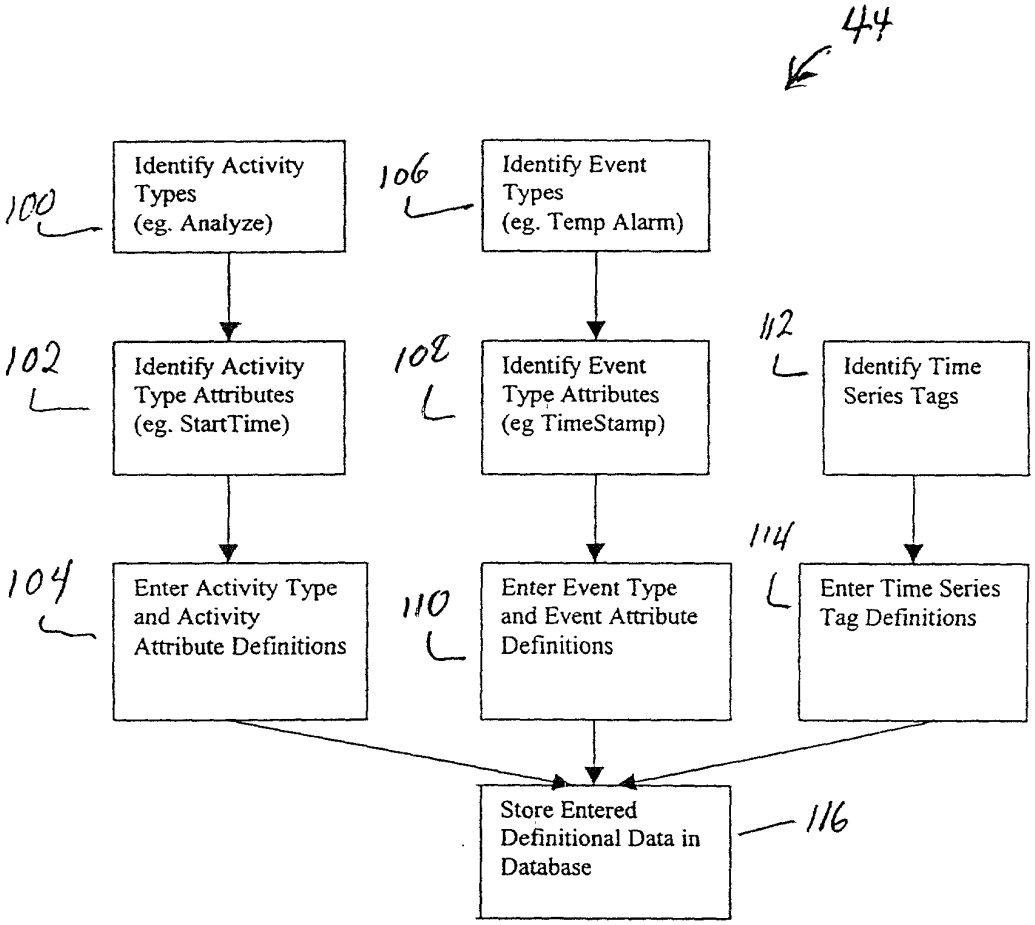
44
Identify Activity Types (eg. Analyze)
100
Identify Event Types (eg. Temp Alarm)
106
Identify Activity Type Attributes (eg. StartTime)
102
Identify Event Type Attributes (eg TimeStamp)
108
Identify Time Series Tags
112
Enter Activity Type and Activity Attribute Definitions
104
Enter Event Type and Event Attribute Definitions
110
Enter Time Series Tag Definitions
114
Store Entered Definitional Data in Database
116

Fig. 13

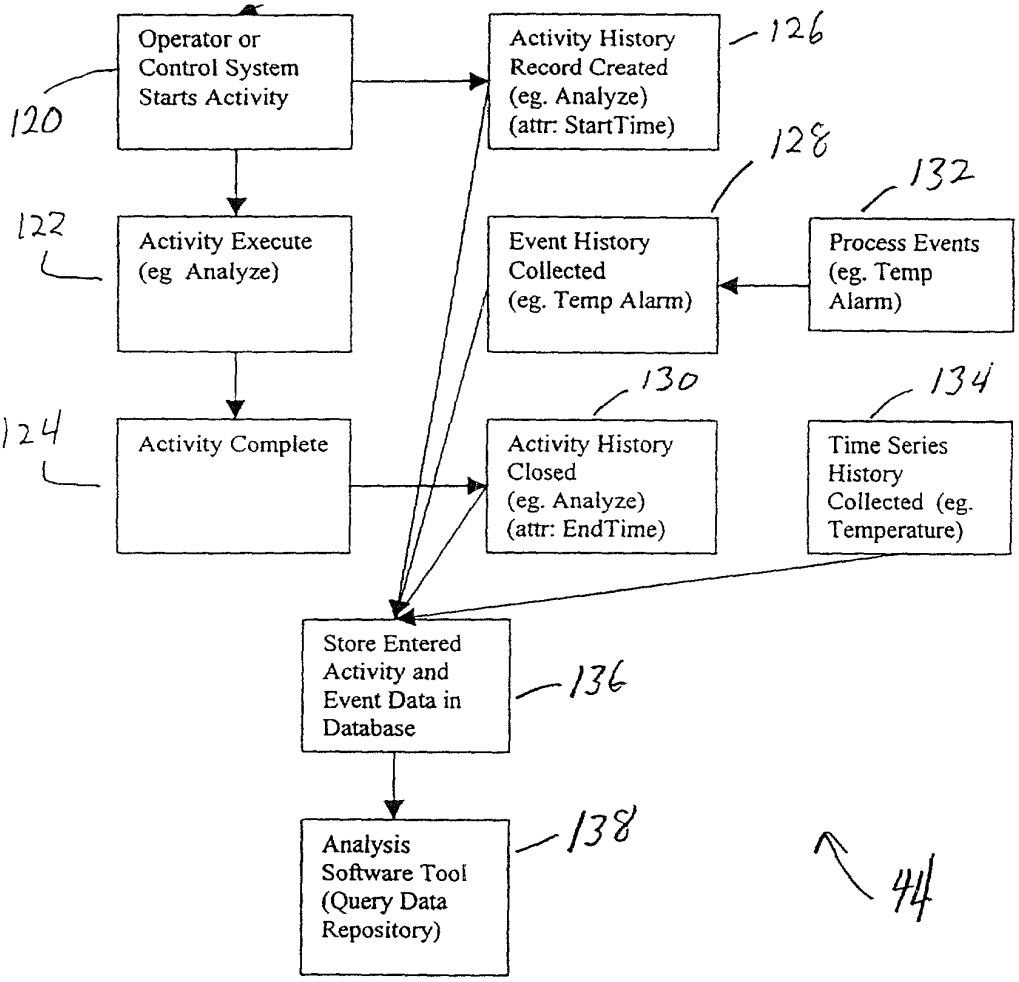
Operator or Control System Starts Activity
120
Activity History Record Created (eg. Analyze) (attr: StartTime)
126
128
132
Activity Execute (eg Analyze)
122
Event History Collected (eg. Temp Alarm)
Process Events (eg. Temp Alarm)
130
134
124
Activity Complete
Activity History Closed (eg. Analyze) (attr: EndTime)
Time Series History Collected (eg. Temperature)
Store Entered Activity and Event Data in Database
136
Analysis Software Tool (Query Data Repository)
138
44

Fig. 14